

**WHAT IS CLAIMED IS:**

1. An apparatus for switching communication data cells for a plurality of communication ports in a communication network, said apparatus comprising:

a register block coupled to a first interconnect bus and having a memory  
5 for storing a connection setup notification;

a scheduler module coupled to said first interconnect bus and operably  
configured to determine scheduling of communication data cell transmissions to  
said communication ports;

a connection state unit coupled to a second interconnect bus and having a  
10 memory for storing connection information;

a look-up table coupled to said first interconnect and having a memory for  
storing a cross reference of a path identifier and an index into said connection  
state unit;

a processing unit coupled to said first interconnect bus for communication  
15 to said scheduler, said register block and said look-up table, and is operably  
configured to couple to said second interconnect bus for communication to said  
connector state unit and said communication ports, said processing unit is further  
operably configured to transmit communication data cells between

communication ports based on information collected from said register block, said look-up table, said connection state unit, and said scheduler module; and

a program memory unit coupled to said processing unit and having a memory for storing instruction executable by said processing unit

5           2.       The apparatus of Claim 1, wherein said program memory unit is further coupled to a host processor, wherein said host processor supplies said executable instruction to said program memory unit memory.

10           3.       The apparatus of Claim 1, wherein said scheduler module is provided in hardware.

15           4.       The apparatus of Claim 1, wherein said processing unit comprises a packed data structure processor.

          5.       The apparatus of Claim 1, wherein said connection information stored in said connection state unit includes traffic type, source and destination port identification and transmission parameters.

6. The apparatus of Claim 5, wherein said transmission parameters include virtual path translation information, cell rates for programming said scheduler module, and operation and maintenance configuration parameters.

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7. The apparatus of Claim 1, wherein said processing unit is further operably configured to perform quality of service type functions based on a predetermined traffic contract.

8. The apparatus of Claim 1, wherein said scheduler is implemented in hardware managed by said processing unit writing to command registers associated with said scheduler.

9. The apparatus of Claim 1 wherein said processing unit is further operably configured to execute VPI/VCI look-ups.

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10. The apparatus of Claim 1 wherein said processing unit is further operably configured to set-up and tear-down a connection.

11. The apparatus of Claim 1 wherein said processing unit is further operably configured to execute VP/VC translation.

12. The apparatus of Claim 1 wherein said processing unit is further operably configured to execute traffic shaping.

13. The apparatus of Claim 1 wherein said processing unit is further operably configured to execute operation and maintenance processing.

14. The apparatus of Claim 1 wherein said processing unit is further operably configured to update ATM layer statistics.

15. A system for switching communication data cells for a plurality of communication ports in a communication network, said system comprising:

a register block coupled to a first interconnect bus and having a memory for storing a connection setup notification;

5 a scheduler module coupled to said first interconnect bus and operably configured to determine scheduling of communication data cell transmissions to said communication ports;

a connection state unit coupled to a second interconnect bus and having a memory for storing connection information;

10 a look-up table coupled to said first interconnect and having a memory for storing a cross reference of a path identifier and an index into said connection state unit;

15 a processing unit coupled to said first interconnect bus for communication to said scheduler, said register block and said look-up table, and is operably configured to couple to said second interconnect bus for communication to said connector state unit and said communication ports, said processing unit is further operably configured to transmit communication data cells between communication ports based on information collected from said register block, said look-up table, said connection state unit, and said scheduler module;

a host interface unit for interfacing a host processor with said connection state unit and said register block, wherein said connection setup notification is loaded into said register block from an indication from said host processor, and wherein said connection information is loaded into said connection state unit from an indication from said host processor; and

a program memory unit coupled to said processing unit and having a memory for storing instructions executable by said processing unit.

16. The system of Claim 15, wherein said program memory unit is further coupled to said host processor, wherein said host processor supplies said executable instruction to said program memory unit memory.

17. The system of Claim 15, wherein said scheduler module is provided in hardware.

18. The system of Claim 15, wherein said processing unit comprises a packed data structure processor.

19. The system of Claim 15, wherein said connection information stored in said connection state unit includes traffic type, source and destination port identification and transmission parameters.

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20. The system of Claim 15, wherein said transmission parameters include virtual path translation information, cell rates for programming said scheduler module, and operation and maintenance configuration parameters.

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21. The system of Claim 15, wherein said processing unit is further operably configured to perform quality of service type functions based on a predetermined traffic contract.

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22. The system of Claim 15, wherein said scheduler is implemented in hardware managed by said processing unit writing to command registers associated with said scheduler.

23. The system of Claim 15, wherein said processing unit is further operably configured to execute VPI/VCI look-ups.

24. The system of Claim 15, wherein said processing unit is further operably configured to set-up and tear-down a connection.

25. The system of Claim 15, wherein said processing unit is further operably configured to execute VP/VC translation.

26. The system of Claim 15, wherein said processing unit is further operably configured to execute traffic shaping.

27. The system of Claim 15, wherein said processing unit is further operably configured to execute operation and maintenance processing.



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